



**FACULTY OF SCIENCE,
ENGINEERING & TECHNOLOGY**

**School of Geography
& Environmental Studies**

CONFERENCE ABSTRACTS 2010

PLEASE DO NOT REMOVE
FROM THE ROOM

Copies available on request

SCHOOL OF GEOGRAPHY AND ENVIRONMENTAL STUDIES

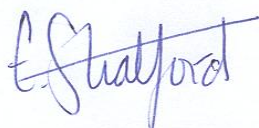
CONFERENCE 2010

Welcome to the 2010 School of Geography and Environmental Studies Conference – the seventh year that such an event has been an important part of our calendar of engagement. Our aim is simple: to celebrate and share work from our Honours, Masters by coursework and Research Higher Degree candidates, as well as our staff and Honorary Research Associates.

The School community is well-known for disciplinary specialisation and expertise, and for interdisciplinarity, and its members are strongly committed to common-good scholarship. As this book of abstracts will attest, our research interests include a wide range of issues and agendas through which we are able to contribute essential knowledge to geography, environmental studies and spatial information science, and add value to other disciplines. Often, our research benefits from funding and in-kind support from public, non-government and private sectors and, in turn, we are able to make significant contributions to the knowledge needs of those sectors.

We are committed to providing opportunities for the members of our community to share their work in a collegial and supportive environment. This aggregate effort contributes to the University of Tasmania's EDGE2 agenda and the pursuit of excellence, distinctiveness, growth and engagement.

I trust that you will enjoy the range of offerings in this year's program.



A/Prof Elaine Stratford
Head of School

PLENARY SPEAKERS

ALPHABETICAL BY SURNAME

Mr Peter Boyer

How climate is changing us

Peter Boyer offers a personal reflection on how the debate about climate change is affecting our social and political lives and the way we think about ourselves.

Dr Stewart Williams

For a Big Australia: Sizing up our Geography, past, present and future

PM Kevin Rudd introduced the notion of 'a big Australia' in November 2009 with respect then to nation-building policy. The emphasis of several rather upbeat public addresses at the time specifically anticipated the growth of our population. However, questions about providing adequately for all Australians into the future quickly brought some more down-to-earth focus on the capacity of our cities and their infrastructure and the availability of natural resources. Attempts to imagine our futures variously through such political lenses, often in relation to issues of prosperity, wellbeing and sustainability, continue to drive a current public debate in which size apparently does matter. Therefore, here, I examine what associated notions of bigness might mean for the development of our geographical practices. In so doing, I scan Australia's environmental history, two centuries of government policy, and our contemporary continental landscape, as I search for signposts to guide us. Drawing on the discipline's social and physical sides, I return to some personal observations in looking for the humanity within geography, and in calling for a more ethical reflexivity as well as magnanimity in hope of our practicing what might be an even 'bigger' geography.

CONFERENCE SPEAKERS

ALPHABETICAL BY SURNAME

Keiran Andrusko

Sense of place, use and values of the Fern Tree Park and Bower, Tasmania

The Fern Tree Park and Bower, Tasmania was chosen as a suitable setting to study the relationship between the population of Hobart and visitors with Mount Wellington through a recreational and heritage focus. Natural resource management presents a growing body of research that supports the uptake of sense of place, particularly place attachment, to further understand of place use and values beyond quantitative demographic and visitation statistics that have predominately been used in the past to guide management decisions. Cultural heritage management similarly supports the increased emphasis on the importance of people-place relationships in guiding management. Sense of place assessment has never been integrated to use and values surveys for Tasmania's iconic Wellington Park however. This research aimed to integrate sense of place to a study of use, heritage and values of the Fern Tree Park and Bower and make contributions to the growing body of research regarding place attachment and visitor motivations at natural-setting recreational areas where many ambiguities remain. The study also aimed to provide information on visitation and management issues to support the development of a master plan for the site.

Jayne Balmer

A first appraisal of the importance of landscape on Tasmanian wet forest biodiversity

Both wildfire events and forest harvesting lead to changes in forest floristics, structure and the mosaic of forest types in the landscape. A natural experiment has been established to study the relative importance of landscape factors on the biodiversity outcomes within the forest patch compared with other factors such as historical and physical environmental determinants of forest type. The experimental approach and early results of this study will be presented.

Reed Burgette

Sea level rise and land level change at Macquarie Island and deformation of the Australia-Pacific plate boundary zone

Through the combination of rare historical sea level observations collected during Sir Douglas Mawson's 1911-1914 Australasian Antarctic Expedition, together with modern sea level data, space geodetic estimates of crustal displacement and modeling of coseismic and postseismic earthquake deformation, we present a contemporary analysis to constrain sea level and land level change over the twentieth century at Macquarie Island. We refine the source parameters of the $M_w \sim 8.0$ great earthquake of 23 December 2004 using estimates of coseismic displacements at regional GPS sites including HOB2 in Hobart. Modelling four years of post-2004.98 deformation constrains the oceanic upper mantle rheology. The 2000-2005 Macquarie Island GPS vertical velocity of -2.46 ± 0.64 mm/y is explained by ongoing postseismic deformation from Macquarie Ridge great earthquakes of 1989 and 1924. The twentieth century observed relative sea level rise of $+4.8 \pm 0.6$ mm/y is consistent with an absolute sea level rise of $+2.0 \pm 0.8$ mm/y.

Dr Aidan Davison

Whatever happened to the appropriate technology movement in Australia? A preliminary inquiry into the convergence of environmentalism, technology and home

The Australian alternative technology movement, whose heyday was the late-1970s and early-1980s, has gone largely undocumented by social researchers. This paper sketches out the key features of this movement and considers what may have happened to in the wake of the rise of agendas for sustainable development, and related calls for sustainable production and consumption, in the late-1980s. The ideal of the self-sufficient home at the centre of the alternative technology is contrasted with the presently emerging ideal of the eco-efficient home. It is argued that while many of the domestic technologies advocated by the alternative technology movement are now becoming a common feature of Australian homes, the political objectives of this movement remain substantially unrealised.

Michael Driessen

Invertebrate community succession following fire in buttongrass moorlands

Buttongrass moorlands dominate the landscape of western Tasmania and the ecosystem is recognised as having world heritage value. The vegetation is highly flammable and was probably frequently burnt by Aborigines prior to European settlement. Land managers are increasingly using fire in buttongrass moorland to prevent a build-up of fuel loads to avoid catastrophic fires that could destroy fire sensitive ecosystems (as has happened in the past), as well as life and property. Little is known about the effects of fire on fauna in buttongrass moorlands and this study investigates the effects of low intensity fires (<500kW/m) on invertebrates using two complimentary experimental designs: (1) site-scale, replicated BACI design with up to three years of pre-burn data and up to seven years post-burn data, and (2) landscape-scale, replicated space-for-time substitutions aimed at providing insights into the effects of fire over longer time scales (1-54 yrs).

Mahni Dugan

Identity and place as factors in the transition to sustainability

Faced with global issues and rapid local change, we are challenged to find actions we can take to move towards an ecologically sustainable relationship between society and the environment. My proposition is that sense of self, sense of place, and their *interdependence*, are critical factors in making that transition.

It is that interdependence – the *relationship* between these factors that I am particularly interested to explore. Within that very broad context, the scope of this research is to focus on how people's sense of self and sense of place affect their experience of significant place changes. Emphasis will be on the role the relationship between these factors may play in developing resilience and belonging. Such qualities may be seen as critical to people's sense of self, autonomy, and agency, and thus central to the quality of their relationship with the environment.

The research will be qualitative, focused from an interdisciplinary, social ecology perspective in paradigms that are interpretive and critical, deeply examining several instrumental case studies with a view to contributing knowledge to support people when making significant transitions, particularly changes of place.

In this context, today's presentation will explore a quadrant model of possible characteristics of sense of self/place relationships.

Catherine Elliott

Talking houses in Aceh Besar

In a disaster situation creating fast, simple, permanent housing is often given priority over how housing is built. When non-local relief organisations design, plan or build housing they bring ideas about what housing is and how it should look and feel to the locale. They also bring ideas about what people want and need, and what is best for them. The resulting post-disaster houses can sometimes be easily identified as 'belonging to' a certain relief organisation. Such a transformation of the visual landscape is evident in Aceh. In a post-disaster situation the impact of non-locals building housing and the introduction of different ideas about the use, position and purpose of housing cannot be understated.

As a student researcher I examine the post-disaster housing process in one community in Aceh Besar, Indonesia. I will discuss how newly built houses are affecting people's ability to resume daily life and how people are responding to such housing following the devastation of the 2004 Asian Tsunami in Aceh.

Kathryn Evans

A history of severe weather events in Tasmania from 1803 to 1900

Tasmania's climate has, from the early years of settlement, been perceived and promoted as the most 'English-like' and benign of the Australian colonies. Such claims have been used to attract migrants, tourists and industry to the island. In reality, however, the climate proved variable from one year to the next, particularly in regards to rainfall. Incidence of widespread and extended drought, devastating bushfires and raging floods and storms all impacted on European settlement. This paper examines the impacts of these events for the period 1803 - 1900 and discusses how individuals and governments responded to them. It is argued that there was a tendency to underestimate or ignore potential risks and a general failure to effectively prepare and plan for them. This resulted in predominantly 'crisis' related responses.

Sarah Fayed

Helicia: Nought to 100 species in 5 million years

When you first spot a *Helicia* tree in the rainforest it seems fairly unimpressive. Generally not a canopy tree, generally a bit scraggly looking and unless they fortune a sunny break in the canopy they don't flower or fruit too much. However, they have the most surprising evolutionary pattern. *Helicia* come from the plant family Proteaceae and yet they break many typical Proteaceae patterns. They are the among the most recently speciating genera in the family (a distinction usually reserved for Proteaceae in temperate or Mediterranean climates) and they have the highest speciation rate out of all 80+ genera. *Helicia* also have the largest geographic distribution of any Proteaceae genus and extend further into Asia than any other Proteaceae. So why have *Helicia* speciated so rapidly and recently and spread so far..... and what can it tell us about evolution, speciation and extinction? This is the central question of my research, and it has taken me to tree canopies in Papua New Guinea, Cape York and the Daintree in Queensland. Come and have a look at the work-in-progress that is my thesis and a few odd photos that I picked up along the way.

Amelia Fowles

Reef macro-algal communities in three capital city estuaries: Broad-scale patterns in response to anthropogenic impacts?

Human alteration of the marine environment through direct and indirect means is increasingly causing major stress on aquatic ecosystems, placing marine biodiversity at serious risk. Broad spatial scale, community level information is needed to increase our understanding of the nature of these impacts. Temperate shallow reef habitats support a high diversity of species and ecological processes, and are frequently located off shorelines where land-based activities are causing noticeable change. Current knowledge is, however, extremely sparse for reef communities in temperate estuaries. This study describes spatial patterns in reef macro-algal communities across pollution gradients at regional scales.

Steve Harwin

Applications of the TerraLuma Unmanned Aerial Systems (UAS) for change mapping

The TerraLuma Unmanned Aerial System (UAS) combines an unmanned aerial vehicle (UAV) with a number of sensors including visible, near infrared and thermal cameras, LiDAR (Light Detection and Ranging), and eventually multispectral and/or hyperspectral sensors. The data gathered using this UAS is very high resolution spatially and the cost and ease of deployment make the system ideal for high temporal resolution data capture tailored to specific applications. My PhD Thesis (which began in April) will investigate the potential of the UAS for change detection and visualisation. This talk will highlight the wide range of applications that the system could be used for and focus in on the case studies that we have chosen, including coastal change monitoring and crop monitoring. These case studies, along with the work of the other team members, will provide the proof of concept for the future use of the TerraLuma UAS commercially.

Kiros Hiruy

Displacement and Emplacement: Ecology of the refugee journey

Antonio Guterres, the UN High Commissioner for refugees, once said that “the twenty-first century will be characterized by the mass movement of people being pushed and pulled within and beyond their borders by conflict, calamity, or opportunity” (Guterres 2008:99). Such a movement of people - displacement shapes and is being shaped by social and political changes in the world today (Castles 2003). Displacement as a process is a common feature in the life of a refugee, and refers both to physical movement and a sense of being socially or culturally “out of place”; a process that moves people away from their roots/home/place – their original position.

Displacement invokes a sense of place attachment, rather than detachment. In this presentation I will examine the ecology of displacement and emplacement in the life of a refugee by examining the process of displacement, its link with emplacement and place attachment and resettlement. I argue that popular discourse on displacement is unidirectional and misleading, and that it circumvents an opportunity for meaningful dialogue and better understanding by undermining the critical experience of refugees that has shaped their attitudes to survival and life, and informed their practices in life and offer an alternative view by presenting displacement as a complex, multidimensional and multidirectional.

Karen Johnson

To buzz or not to buzz: Bee behaviour on Sprengelia (Ericaceae)

Buzz pollination is unusual in the Styphelioideae, Ericaceae. *Sprengelia incarnata* and *S. propinqua* have floral characteristics that suggested they might be adapted to buzz pollination, which has been mooted as a transitional stage to wind pollination. To test whether their flowers are adapted for buzz pollination we observed the behaviour of visiting animals and the floral, pollen and scent attributes of both species. We found that *S. incarnata* is sonicated by five short-tongued native bee species and *S. propinqua* is groomed by two. The introduced honeybee (*Apis mellifera*) visited *S. propinqua* but ignored *S. incarnata*. The two *Sprengelia* species have overlapping pollinator profiles, but have diverged enough in their pollen attributes to elicit different behaviours from the same bee species. *Sprengelia propinqua* has an additional functional group of potential pollinators: represented by the long-tongued *A. mellifera*. Both species had similar floral scent profiles but *S. incarnata* had smaller and drier pollen: a necessary pre-adaptation for ambophily and wind pollination.

Professor Jamie Kirkpatrick

Decades-scale vegetation change in burned and unburned alpine coniferous heath

Fire appears to be a rare event in alpine vegetation, suggesting that its effects might be greater and more persistent than in most lowland vegetation types. Climate change may make alpine environments more fire-prone. This paper describes decade-scale succession after fire in long term paired plots over fire boundaries in Tasmanian alpine coniferous heath, assesses its type, trajectories and speed and examines the data for any evidence of climate change. Recovery of vegetation was extremely slow by global standards, conforming, as predicted to the relay floristics model. There was extremely low cover of fire sensitive species 43-69 years after fire and much bare ground still evident, with the rate of revegetation declining through time. Higher soil fertility was related to faster rates of revegetation. Gymnosperm shrubs increased at the expense of angiosperms in the unburned plots in the same period and cryptogams declined in both burned and unburned plots.

Dr Michael Lacey

Sea level rise inundation modelling in SGES

Sea level rise is an important expected consequence of climate change which has implications for coastal infrastructure, communities and ecosystems. Potential sea level rise scenarios have been published by the Intergovernmental Panel on Climate Change and others. Inundation modelling can be used as a way to evaluate possible inundation effects of these scenarios. We have produced inundation models for commonwealth and state government departments and other coastal management organisations. Our approach uses the "bathtub" inundation method, which takes sea level components (including sea level rise estimates and tidal range) together with their associated height error estimates, and combines them with a digital elevation model (DEM) to calculate a spatial grid over the area of interest showing the locations likely to be inundated given the model settings and constraints. The model is currently implemented in the Python scripting environment. Increased availability of LiDAR height data provides an opportunity for more precise modelling than was previously possible. Modelled results can be used for economic, social and ecological purposes to inform the future management of vulnerable coastal areas. One important

spinoff of this modelling is that it can be used to predict the present and future extent of coastal saltmarsh communities.

Peat Leith

Climate adaptation in the Australian edible oyster industry: A social-ecological systems approach

The Australian edible oyster industry is affected by changes in the biophysical conditions on land and at sea and is thus potentially vulnerable to diverse climate change impacts. Intervention to enable strategic, intentional adaptation is premised by an understanding of how the industry functions, in terms of the various ecological, physical, human, economic and social drivers of change. In this paper, I link a social-ecological systems approach with a participatory assessment of adaptive capacity, which uses a livelihoods framework to analyse the potential for adaptation in the Australian edible oyster sector. This analysis compares structural and functional characteristics of the edible oyster industry across the three key oyster producing states of Australia: New South Wales, Tasmania and South Australia. The drivers of change and adaptation in the sector are outlined and analysed to define priorities for collective action to develop adaptive capacity.

Dr Arko Lucieer

Using an Unmanned Aerial Vehicle (UAV) for ultra-high resolution mapping of Antarctic moss beds

Polar regions are experiencing rapid and severe climatic shifts with major changes in temperature, wind speed and UV-B radiation already observed in Antarctica. Since vegetation is isolated to the coastal fringe and climatic records only extend back 50 years, with limited spatial resolution, we urgently need new proxies to determine if coastal climate has changed over the past century. In a manner similar to trees, old growth mosses also preserve a climate record along their shoots. Our ability to accurately date these mosses and map their extent in sufficient spatial detail means that, for the first time, mosses can be used as sentinels to provide crucial information on how the Antarctic coastal climate has changed over past centuries and how biota has responded to these changes.

The spatial scale of the moss beds (tens of m²) makes satellite imagery (even very high resolution imagery of 0.5 m) unsuitable for mapping their extent in sufficient detail. Due to logistical constraints aerial photography is impractical. Recent developments in the use of unmanned aerial vehicles (UAVs) for remote sensing applications provide exciting new opportunities for ultra-high resolution mapping and monitoring of the environment. In this study, we developed a UAV consisting of a remote controlled helicopter carrying three different cameras: visible colour, near-infrared, and thermal infrared for cost-effective, efficient, and ultra-high resolution mapping of terrestrial vegetation in the Windmill Islands, Antarctica. These three sensors allow us to map different physical characteristics of the moss beds at resolutions of several centimetres. This paper and presentation will address the issues encountered in developing a UAV system, discuss the different UAV sensors and components, and demonstrate how this system can be applied in these fragile remote polar ecosystems.

Dr Jon Marsden-Smedley

Adventure volunteering or volunteering for adventure: The use of volunteers for environmental management

Land management agencies are frequently between a rock and a hard place due to the increasing gap between the resources required for effective environmental management versus the resources actually available. Adventure volunteering has the potential to assist land managers by providing a pool of effective, motivated and experienced workers, whilst also providing volunteers with positive and rewarding experiences so that they remain in the program and long-term follow-up works are performed. This paper will discuss these issues, outline a set of criteria that need to be met for programs to be effective and provide examples from groups doing remote area weed management in Tasmania.

Callum McEachern

Changing relationships with place: The challenges of the digital future

Despite the unprecedented transformative power of digital technologies, their impact on quality of life and sustainable, innovative and democratic outcomes is poorly understood. Data from two similar rural regions in Tasmania and Norway, questions the widespread assumption that daily use and content of digital technologies will improve community responsibility for the future of places. Spatial, temporal, informational and communicative stresses are undermining the promised potential of 'the digital future'. The solution requires far more critical learning of both the ends and the means.

Dr Peter McQuillan

The biography and ecology of Tasmanian ants - an emerging frontier

Australia has been described as the land of the ants and 5,000 species say this can't be wrong. But Tasmania is contrarian – with extensive areas of the poorest ant habitat in Australia it supports a modest fauna of only 120 species with few endemics and many keystone species, such as meat ants, are absent from the island. Yet ants are ubiquitous components of terrestrial ecosystems and play important roles as soil engineers, seed dispersers, predators and recyclers of carbon. In addition, they are the preferred prey for a variety of mammals, birds and reptiles. Their importance and abundance make them informative and easily measured indicators of environmental change which can be exploited to advantage.

Tasmanian ants present a new opportunity to investigate the biogeography, function and conservation of a neglected aspect of our fauna. I will relate some preliminary findings with students so far, and outline what I believe are some productive lines of enquiry for the future.

Dr Keith Miller

Anomalies in the vertical datums of Barbados, West Indies

It has been long acknowledged by surveyors working on the island of Barbados that the land survey datum of the island is some 0.3 m above Mean Sea Level (MSL). To differentiate the two levels the land survey datum is termed the Lamont datum after the organisation that founded the original mark on which it is based. The Admiralty operated independently in establishing a relationship between MSL and Chart Datum for navigational purposes, and fifty years later found the need to increase this difference by 0.24 m. A relative increase in sea level at the adjacent land mass is an obvious explanation for the datum difference, but clearly does not constitute the whole of the discrepancy.

In considering intermittent sea level observations made over the last 50 years it is now proposed that the reference for the primary vertical control mark for the country has been misinterpreted. At the time of establishment of land survey datum the offset was closer to 0.4 m. It is suggested that sea level is falling relative to the land mass, and that the difference between land survey datum and mean sea level has reduced to 0.36 m in the present day.

Dr Richard Mount

The new environmental Common Assessment and Reporting Framework

A common assessment and reporting framework (CARF) is proposed based on a deliberate synthesis of the monitoring, evaluation and reporting (MER) frameworks that have been operating in the estuarine, coastal and marine arenas across fisheries, conservation, marine bioregional planning for commonwealth, regional, state and territory frameworks including the ECAF. CARF is consistent with a defined set of principles and those prescribed by ecologically sustainable development, ecosystem based management, ecosystem based fishery management, and ecosystem services approaches. It makes explicit the steps needed to produce the information base required for adaptive management purposes. It is flexible and can be used throughout the full range of MER activities – from local through to regional, program, state, national and international levels. It is intended to support integrated reporting and can be used to:

- guide the selection of indicators and design monitoring programs
- evaluate and grow the information base needed for management including inventories, data gap analyses, classifications, and document current best environmental (ecosystem) understanding
- produce vulnerability assessments, risk assessments and reports
- produce ecological condition assessments and reports ('status and trend reports')
- produce predictive 'outlook' reports
- support program evaluations and performance assessments

Dr Richard Mount and Jan Tilden

How do you tell people about sea level rise impacts so they can hear it?

As geographers, we are frequently communicating our work to others. We have been working hard to improve the quality of our communication efforts. Very recently we conducted a study in far northwest Tasmania in the Circular Head region that evaluated the vulnerability of 180 km of coastal foreshore habitats to sea level rise impacts. The overall study approach was based on the Environmental Condition Assessment Framework. We explicitly integrated a Communication Plan into the project from the start and this shifted the shape of the project in interesting ways. The Plan encouraged us to identify very precisely who the primary audience was and, therefore, what key messages to draw from the study findings. We generated communication media including graphical conceptual diagrams of the habitats and their associated ecosystem services. We then identified the impacts of sea level rise on the habitats and their associated human benefits. We carefully structured the key messages and were informed in this by a strategic frame analysis and the 7 Doors Model of social change. The approach and the resulting key messages will be presented and discussed.

Vishnu Prahalad and Chris Sharples

Sea level rise effects: Where? When? How? Forsooth?

Despite the overwhelming evidence pointing towards recent eustatic sea level rise, there is still a lack of clarity (and even incredulity in some cases) as to whether, where, when, and how the effects of sea level rise are becoming apparent on the coastal interface. To investigate these questions, we conducted a study on the intertidal environments of far northwest Tasmania using time series aerial photographs, extensive field mapping of geomorphology, vegetation surveys and wind wave modelling. Results from the study provide good evidence that sea level rise has been happening and has resulted in extensive shoreline retreat with an apparent onset of progressive erosion around 1968-1975. There is a high correlation between the wave-power and mapped shoreline erosion which is consistent with sea level rise as the underlying cause and variable wave exposure as the principle control on the resulting patterns of erosion. The erosion of mature trees and shrubs, landward transgression of saline vegetation and the exposure of very old soil deposits further add evidence to the onset and effects of sea level rise. The findings from this research have several implications for understanding the mechanisms of sea level rise and assessing the vulnerability of coastal values in view of their adaptation management.

Millie Rooney

Wicked Delight: Rule breaking for social change

My research aims to investigate people's experiences of everyday wickedness and delight. This is being done in an Action Research context with the aim of developing strategies for encouraging people to share resources in their local neighbourhood. This paper will provide a brief outline of this larger PhD research before presenting a more detailed theoretical backgrounding of wickedness and delight. Discussion will centre on the value of these concepts as potential experiences/tools in which everyday norms and behaviours are challenged.

Adam Steer

Optimising airborne LiDAR positioning and processing for remote area geophysical surveys

Airborne Light Detection and Ranging [LiDAR] is a promising tool for obtaining precise information on surface geophysical features over remote areas, able to measure the range between an aircraft and earth surface very accurately [$\sim 2\text{cm}$ at 600m flight altitude] in a wide swath along a flight path. This allows detection of low-elevation features like Antarctic pack ice freeboard or small coastal topography changes. For these applications the instrument must be positioned very accurately, using survey-grade Global Positioning System [GPS] receivers and inertial measurement units. Unfortunately, the applications mentioned are often worst-cases for accurate GPS positioning. Over Antarctic pack ice, fixed ground reference stations usually required for precise GPS positioning are absent. Baseline length dependencies are also prevalent, since surveys take place hundreds of kilometres from GPS reference stations which may also be moving [ship-based]. These factors may also apply for LiDAR surveys over remote islands. This project aims to optimize long-range LiDAR surveying using GPS and inertial data processing; metrics derived from LiDAR data; and photogrammetric positioning techniques. The end product of this research will be the means to generate geophysical data products at accuracies approaching that of the LiDAR instrument from long-range aerial surveys.

Associate Professor Elaine Stratford

Fresh! A map of a dream of the future

The purpose of this paper is to explore young people's perceptions and understandings of climate change in relation to the particularities of island place, and to make a series of observations about what may be gained for island scholarship and geographical inquiry from interdisciplinary engagement involving the creative professions, educators and young people. That exploration is undertaken with specific reference to Fresh! A Map of a Dream of the Future, a novel multi-partner project among geographers, artists, writers, and community cultural development workers, who have produced an education kit, virtual world and new media arts installation, the last to be featured at Junction 2010, the Australian Regional Arts National Conference.

Jenny Styger

Rainforest flammability: Determining the conditions for fire ignition and spread within fire-sensitive vegetation

The 'ecological drift' model has been widely accepted as an explanation for the role of fire in patterning the vegetation of western Tasmania. Within this model rainforest is considered the climax vegetation, capable of regenerating in the absence of a major disturbance event, such as fire.

Rainforest is considered to be a fire sensitive community, as many rainforest species are incapable of surviving a fire event. Although fire in rainforest is rare, large rainforest fires have occurred in the past. These events are likely to increase with future climate change. It therefore becomes important to understand the conditions under which fire will sustain and spread within rainforest as this will aid in protective measures, such as hazard-reduction burning, and the allocation of resources during a wildfire. My research will examine the relationships between rainforest microclimate and standard meteorological conditions as well as determining the flammability of various rainforest components. It is hoped that this information will assist in the development of a predictive index for fuel moisture within rainforest. This may be an improvement to the current Soil Dryness Index or an adaptation to other current predictive indices such as the Canadian Forest Fire Weather Index System.

Darren Turner

Monitoring vegetation with an Unmanned Aerial Vehicle (UAV)

Unmanned Aerial Vehicles (UAV's) are an exciting new tool for gathering high resolution spatial data. Low cost UAV's based on cheap, readily available remote controlled aircraft are becoming increasingly popular with the improvement of available sensors and GPS units. This project aims to investigate the feasibility of combining data collected from a variety of sensors (visible, near infrared and thermal infrared cameras, along with a miniature Light Detection and Ranging [LiDAR] unit) to create high resolution spatial datasets of vegetation communities and agricultural crops.

Current methods of gathering spatial data for vegetation communities include satellites and aerial photography. These methods have relatively low spatial and temporal resolutions and thus detection of subtle but important changes in vegetation structure can be difficult. On demand, high resolution mapping with UAVs has the potential to assist with management and sustainability of natural vegetation communities and high value crops.

In this presentation, 1) initial system development and field testing data will be displayed; 2) a proof of concept and LiDAR prototype will be explained and 3) case studies and future developments will be discussed.

Phillipa Watson

Barriers to renovation for housing sustainability in Tasmania

Australian building legislation now incorporates significant environmental performance requirements for new housing and major housing renovations. These regulations are likely to be tightened over the coming decade, especially as policies for climate change mitigation take effect. Yet most urban and suburban landscapes in Australia are dominated by existing housing which falls well short of current standards. This observation is particularly pertinent in Tasmania, the coldest, most economically marginal state in Australia with one of the nations' highest proportions of old housing stock. This existing housing will deliver unacceptable environmental impacts and unsustainable living circumstances for decades to come unless retrofitted or renovated to improve resource use efficiency, ecological appropriateness and liveability. In this paper, we describe and analyse a range of individual, institutional and organisational barriers to renovation for housing sustainability in Tasmania by drawing upon interviews and focus groups conducted in three interrelated studies with stakeholders from all tiers of government and from private and non-government sectors.

Robert Watson

Planning environmental heroism

One way to theorize geographical and environmental leadership is to list the most dramatic challenges faced by geographical and environmental leaders and organise these ideas in detailed, complex scenarios. This workshop draws on movie logic and the contributions of local geographers to develop a scenario for a Tasmanian environmental movie.

Dr John Young*"Merit" versus "Value": The case of the Egg Island Canal*

This paper is based on recent community reaction to a Development Application by a utility company to place a water pipeline through the middle of a declared Historic Town and in the bed of the oldest navigation canal in Australia that retains its original form and function.

The canal crosses an island adjacent to Franklin in the Huon Estuary, which is owned partly by the Crown and private owners, but predominantly by the Tasmanian Land Conservancy. It has been in continuous use since the middle of the nineteenth century for commercial, recreational and social purposes.

Not surprisingly, the appeal process exposed conflicting priorities based on conflicting philosophical foundations, strategies, jurisdictional issues and historical experiences. The paper will discuss the sources of conflict and the lessons that might be derived from it.